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Gerardo Ubau

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	: 10/799,898	Confirmation No.	8313
Applicant	: Rick Huffman		
Filed	: March 12, 2004		
TC/A.U.	: 3641		
Examiner	: Daniel Lawson Greene		
Docket No.	: PD-06-01		
Customer No.	: 30349		

Title: REDUCED ENERGY TRAINING CARTRIDGE FOR SELF-LOADING FIREARMS

Mail Stop AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT

Sir:

In response to the Office Communications of **February 3, 2006, April 17, 2006,** and in response to the Office Communication of **September 9, 2005,** please amend the above-identified application as follows:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims which begins on page 8 of this paper.

Remarks/Arguments begin on page 23 of this paper.

Amendments to the Specification:

At page 1, please add the following new heading before line 4:

TITLE OF THE INVENTION

At page 1, please replace the heading starting at line 4 as follows:

**TITLE: _____ REDUCED ENERGY TRAINING CARTRIDGE FOR SELF-
LOADING FIREARMS**

Please delete the heading beginning at Page 1, line 6, which starts with:

"INVENTOR: Rick Huffman"

Please delete the heading beginning at Page 1, line 8, which starts with:

"Atty docket: 2503343-991100"

At Page 1, please replace the heading starting at line 10 with the following amended heading:

PRIORITY CROSS-REFERENCE TO RELATED APPLICATIONS

At Page 1, please replace the heading starting at line 17 with the following amended heading:

BACKGROUND OF THE INVENTION

At Page 14, please replace the paragraph starting at line 25 with the following amended paragraph:

2. Description of the Related Art

At page 1, please replace the paragraph starting at line 25 with the following amended paragraph:

In the past, non-lethal training ammunition (NLTA) of a pyrotechnic composition has utilized rounds that are limited to single use then discarded not to be reused again. This design prevents recharging of cartridge (reloading) due to strict restrict energy characteristics preventing 'overcharging' allowing a projectile to travel at an unsafe velocity.

At page 2, please replace the paragraph starting at line 13 with the following amended paragraph:

BRIEF SUMMARY OF THE INVENTION

At page 6, please replace the paragraph starting at line 17 with the following amended paragraph:

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

At page 8, please replace the paragraph starting at line 7 with the following amended paragraph:

Figure 5b illustrates a port end view of the primary case of Figure 5a 4a at the end including cogs for coupling with a piston sleeve in accordance with a preferred embodiment.

At page 8, please replace the paragraph starting at line 18 with the following amended paragraph:

Figure 6c illustrates a mouth end view of the piston sleeve of Figure 6a 5a for coupling with a bullet in accordance with a preferred embodiment.

At page 9, please replace the paragraph starting at line 14 with the following amended paragraph:

DETAILED DESCRIPTION OF THE INVENTION PREFERRED EMBODIMENTS

At page 13, please replace the paragraph starting at line 7 with the following amended paragraph:

Upon rotation, cog portions 12a of the primary case 2 and complementary ones of the sleeve 4, which move along channel 32 of the case, become overlapped, so that the primary case 2 and sleeve 4 are no longer separable by straight axial or telescope-like separation. In ordinary operation, these angularly overlapping cog portions 12a of the case 2 and corresponding cogs of the sleeve 4, overlapping by movement through channel within a second cylindrical insertion portion 32 during rotation, serve to prevent the separation of the case 2 and sleeve 4 upon dynamic activation in stage 2. As referred to above, however, in stage 2 dynamic operation, the cog portions 12a, and corresponding cogs of the sleeve 4, may be preferably configured to shear to reduce further the energy of the projectile. These cog portions 12a of the primary case 2 are shown angularly extending from one end of the longitudinal portions of the cogs 12 to overlap channels between complementary cogs of the sleeve 4 after the relative rotation of the case 2 and sleeve 4 following their initial axial coupling by relative axial or longitudinal movement. This in part permits the case 2 and sleeve 4 to remain coupled, absent the described shearing action, within the chamber upon firing and release of the bullet 6,8 down the barrel of the non-lethal firearm.

At page 14, please replace the paragraph starting at line 26 with the following amended paragraph:

Figure 2b illustrates how, upon detonation of a cartridge that is within primer cavity 50, the case 2 thrusts rearward expanding the volume of the combined cavities 50 and the hollow interior of cylinder portion 28 of the case 2 and sleeve 4 reducing the energy conveyed to the projectile. The expansion of

propellant gas is illustrated clearly showing that pressure builds up on the projectile through the firing hole 40. The projectile 6 releases down the barrel of a non-lethal firearm as a result. Figures 2c-2d respectively illustrate actual sizes of the cartridge in a view through an outer wall of the piston sleeve 4 in the static stage 1 position and in the dynamic stage 2 condition.

At page 15, please replace the paragraph starting at line 3 with the following amended paragraph:

Figure 3a is a cross-sectional view of the two-piece, two stage non-lethal, sub-lethal or lethal, reduced energy, mechanically operating cartridge in a static, stage 1 position in accordance with a preferred embodiment. A propellant unit 50 within a primer cavity 10 at the interior of the case 2 may include a primer cartridge containing detonating and/or exploding material or pressurized gas or a coupling thereto. The primary case 2 of Figure 3a shows a cylindrical portion cavity 28 having defined therein ~~that is the a hollow interior of the portion 28 of Figure 1d.~~ The hollow interior cavity of the cylindrical portion 28 may be right cylindrical as in Figure 1d, or the cavity may have a steadily increasing radius from the primer cavity 50 towards the flash hole 40 that fluidly couples the cavity of the cylindrical portion 28 and the propellant cavity 42. Alternatively, the cavity of the cylindrical portion 28 may have another suitable shape that permits expanding gas within the cavity of the cylindrical portion 28 to flow appropriately to permit the telescoping of the primer base 2 and bullet sleeve 4 and ultimately the release of the projectile 6,8, i.e., upon firing or detonation of the primer cartridge 50 or propellant unit 50 that is charging the NLAT cartridge within the primary case cavity 10.

At page 15, please replace the paragraph starting at line 17 with the following amended paragraph:

Figure 3b is a cross-sectional view of the two-piece, two stage, non-lethal mechanically operating cartridge telescoped from the static position of Figure 3a,

into the dynamic stage 2 condition illustrating effects of firing, in accordance with a preferred embodiment. The NLAT cartridge is shown telescoping from the static position illustrated at Figure 3a due to the pressure of the gas expansion within cavity of the cylindrical portion 28 upon firing of the propellant mechanism 50. Gas pressure also rapidly builds up where the projectile 6,8 and flash hole 40 meet. When the telescoping reaches its maximum extent due to the coupling of the primary case 2 with the piston sleeve 4, the projectile 6,8 releases from the cavity 42 down the barrel of a NLAT firearm. The release of the projectile 6,8 from the cavity 42 is also facilitated by the etched sides described with reference to Figure 1d.

At page 16, please replace the paragraph starting at line 15 with the following amended paragraph:

An optional vent 58 is also illustrated at Figure 3b. The vent 58 is designed to relieve the pressure within the cavity of the cylindrical portion 28 an appropriate amount to achieve a sufficient balance. The vent 58 may be utilized to provide a balance with respect to safety as well, and may serve to reduce the energy of the projectile further. The propellant units 50 release a predetermined average amount of energy with a narrow statistical deviation. However, when the energy released is higher than average, the pressure could quickly build too high and the firearm could fail or other malfunction could occur. The advantageous vent 58, however, can release an enhanced amount of the expanding gas during the firing and potentially prevent the dangerous safety situation described above.

At page 38, please replace the abstract heading with the following amended abstract heading:

ABSTRACT OF THE DISCLOSURE

At page 24, line 1, please amend the heading as follows:

~~What is claimed is~~ **CLAIMS:**